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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,931	06/19/2000	James C. Chen	CHEN0131	4536

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LAW OFFICES OF RONALD M ANDERSON
600 108TH AVE, NE
SUITE 507
BELLEVUE, WA 98004

EXAMINER	
HOBDEN, DAVID V	
ART UNIT	**PAPER NUMBER**
2875	9

DATE MAILED: 06/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/597,931	CHEN ET AL.	
	Examiner	Art Unit	
	David V. Hobden	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 May 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The finality of the previous office action is withdrawn. A new office action follows herein.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8, 12, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker *et al.* (USPN 5,895,115) in view of Goodrich (USPN 5,162,696).

Parker discloses a resiliently deformable vehicular light source, or light emitting panel **21** that mounts on and is shaped to conform to a shape of an external surface of a vehicle (figures 3 and 4) and emits light that provides illumination of a surface over which the vehicle is traveling, indicates an intention of a driver to turn or stop the vehicle, and/or provides an indication of a location of the vehicle (column 1, lines 10-20), the flexible vehicular light source having:

(a) a resiliently deformable substrate **26** having a rear, or lower, surface and a front, or upper, surface, and including a plurality of flexible conductive traces **19**, the

plurality of flexible conductive traces connecting to an electrical system of a vehicle to receive electrical current (figures 2 - 4; column 1, lines 50-63);

(b) a plurality of solid-state light emitting devices **31** (column 9, lines 6-28) mounted in a spaced apart, or high density, array behind the resiliently deformable substrate, the array extending in two orthogonal directions, the plurality of solid-state light emitting devices being electrically energized by an electrical current from, and connecting to, an electrical system of a vehicle (column 8, lines 14-17, and lines 44-47); and

(c) a transparent flexible envelope **34** (column 8, lines 57-63; column 1, lines 50-63) that extends over the plurality of solid-state light emitting devices, providing protection against abrasion, the light emitted by a second plurality of solid-state light emitting devices passing through the transparent flexible envelope, the rear surface of the resiliently deformable substrate being mounted on an exterior surface of a vehicle and being shaped to conform to a non-planar curve of the exterior surface (figure 4; column 3, lines 1-5, column 8, lines 17-34, column 13, lines 33-60).

Parker does not disclose expressly

(a) a first flexible layer having a flexible substrate with a plurality of edge surfaces, such that surface area of both the rear surface and the front surface are each individually and substantially larger than a surface area of any of the edge surfaces.

(b) a second flexible layer having a plurality of solid-state light emitting devices mounted in a spaced apart array on the flexible substrate, the plurality of solid-state light

emitting devices emitting light outwardly and away from the flexible substrate, being electrically energized by an electrical current.

Goodrich discloses

(a) a first flexible layer having a flexible substrate **5** with a plurality of edge surfaces, such that surface area of both the rear surface and the front surface are each individually and substantially greater than a surface area of any of the edge surfaces (see figures 1-3)

(b) a second flexible layer **2** having a plurality of solid-state light emitting devices **3** mounted in a spaced apart array on the upper surface of the flexible substrate, the plurality of solid-state light emitting devices emitting light outwardly and away from the flexible substrate **4**, being electrically energized by an electrical current (figure 2; column 2, lines 9-45); and

(c) a third flexible layer having a transparent flexible envelope **1** (figures 1-3) that extends over the plurality of solid-state light emitting devices, providing protection against abrasion, the light emitted by the plurality of solid-state light emitting devices passing through the transparent flexible envelope (column 1, lines 51-60; column 2, lines 18-23), each flexible layer having sufficient flexibility that when all three flexible layers are combined to achieve the multi-layered flexible vehicular light source, the light source is sufficiently flexible to conform to a substantially non-planar surface (see figure 3; column 2, lines 3-5, and lines 19-27).

Parker and Goodrich are analogous art because they are from a similar problem solving area of successfully mounting a plurality of solid-state light emitting devices

mounted in a spaced apart array to illuminate non-planar surfaces for signaling purposes.

It would have been obvious to a person of ordinary skill in the art to mount Goodrich's plurality of solid-state light emitting devices in a spaced apart array in the configuration for the non-planar vehicle surfaces shown by Parker.

The suggestion/motivation for doing so would have been improve the visibility of Parker's array of light emitting devices by placing them on, rather than behind, the flexible surface to more effectively radiate light perpendicular to the non-planar surfaces.

Regarding claims 2, 4, 5, 8, and 12, Parker further discloses the flexible vehicular light source of Claim 1, further having a plurality of internally reflective surfaces **10**, each disposed proximate a different one **9** of the plurality of solid-state light emitting devices, the internally reflective surfaces focusing the light emitted by the plurality of solid-state light emitting devices in a desired direction, away from the front surface of the flexible substrate (column 7, lines 1-35),

where the plurality of solid-state light emitting devices are arrayed in a plurality of groups, the solid-state light emitting devices in each group emitting light having a different waveband than those in an adjacent group (column 5, lines 9-23), the solid-state light emitting devices in a first group emit white light, a second group emit red light, a third group emit amber light, the vehicular light source being adapted to mount on the rear portion of a vehicle (column 1, lines 10-20), or

where the vehicular light source includes a plurality of different groups of the solid-state light emitting devices that are separately selectively energizable, and where the transparent flexible envelope overlying the different groups is divided into different areas that are colored to transmit light of differing colors when each group of solid-state light emitting devices is selectively energized (column 5, lines 17-23), or

where the flexible substrate is mounted within a recess formed in the exterior surface of the vehicle (see figures 3 and 4; column 9, lines 22-29).

The flexible vehicular light source of Claim 1, further having a plurality of internally reflective surfaces **10**, each disposed proximate a different one **9** of the plurality of solid-state light emitting devices, the internally reflective surfaces focusing the light emitted by the plurality of solid-state light emitting devices in a desired direction, away from the front surface of the flexible substrate (column 7, lines 1-35).

The flexible vehicular light source of Claim 1, where the plurality of solid-state light emitting devices are arrayed in a plurality of groups, the solid-state light emitting devices in each group emitting light having a different waveband than those in an adjacent group (column 5, lines 9-23).

3. Regarding claim 3, Goodrich discloses that the flexible vehicular light source of claim 1, further has suction cups applied to the front surface of the flexible substrate for use in attaching the flexible substrate to a non-planar surface.

It would have been obvious to a person of ordinary skill in the art to adhesively attach the backside of Parker and Goodrich's invention to the non-planar surfaces of a vehicle.

The suggestion/motivation for doing so would have been to utilize a simple and inexpensive mounting means, or method, for affixing the flexible vehicular light source of Parker and Goodrich to an exterior surface of a vehicle where the mounting means would be inexpensive, easily repaired, and resistant to weather conditions and collision damage.

4. Regarding claim 6, Parker and Goodrich fail to disclose where at least a portion of the solid-state light emitting devices in a first group emit infrared light.

It would have been obvious to a person of ordinary skill in the art to have at least a portion of the solid-state light emitting devices in a first group emit infrared light when the vehicle is a military vehicle.

The advantage of doing so would been to allow the vehicle to be used for covert night missions in a "blackout drive" signaling mode used in combination with night vision equipment that is used by military personnel during such operations.

5. Regarding claim 7, Parker and Goodrich fail to disclose expressly where at least a portion of the solid-state light emitting devices in a first group emit yellow light.

It would have been obvious design choice to a person of ordinary skill in the art to have at least a portion of the solid-state light emitting devices in a first group emit yellow light.

The advantage of doing so would been to have yellow light in the first group to the flexible signal light to function as a marker light, or turn signal light, at the front of the vehicle as is well known in the art.

6. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker and Goodrich as applied to claim 1 above, and further in view of Parkyn, Jr. *et al.* (USPN 5,926,320).

Parker and Goodrich do not disclose expressly the flexible vehicular light source of claim 1,

where the light source is adapted to be mounted to a front exterior surface of a vehicle to illuminate a surface over which a vehicle may advance (column 1, lines 41-50), or

where the light source further has:

a totally internally reflective (TIR) lens that covers at least a portion of the plurality of solid-state light emitting devices, said TIR lens focusing the light emitted thereby in a desired direction.

a totally internally reflective (TIR) lens for each of the plurality of solid-state light emitting devices, said TIR lenses focusing the light emitted by the plurality of solid-state light emitting devices away from the front surface, in a desired direction.

Parkyn, Jr. discloses a Ring-Lens system (see figures 4-6; column 1, lines 53-62) for efficient beam formation where the light source is adapted to be mounted to a front exterior surface of a vehicle to illuminate a surface over which a vehicle may advance (column 1, lines 41-50),

or

where the light source further has:

a totally internally reflective (TIR) lens that covers at least a portion of a solid-state light emitting device, the TIR lens focusing the light emitted thereby in a desired direction.

a totally internally reflective (TIR) lens for each of a solid-state light emitting device, the TIR lenses focusing the light emitted by the solid-state light emitting device away from the front surface, in a desired direction (column 1, lines 5-24; column 4, lines 55-61).

Parker, Goodrich, and Parkyn, Jr. are analogous art because they both disclose the use of solid-state light emitting devices in combination with modifiers to distribute the light energy in desired patterns, or directions.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the TIR lens of Parkyn's disclosure for each solid-state light emitting device of Parker's invention.

The suggestion/motivation for doing so would have been because to improve light utilization efficiency, or reduce electrical power consumption (Parkyn: column 1, lines 5-50, esp. lines 48-50).

Therefore, it would have been obvious to combine Parkyn, Jr. with Parker and Goodrich to obtain the invention as specified in claims 9-11.

7. Claims 13-17, 19, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker *et al.* and Goodrich, and further in view of Bennion (USPN 4,774,434; a reference disclosed by the applicant).

The flexible vehicular light source of Parker and Goodrich is as disclosed above.

Parker further discloses a flexible light emitting panel for application to an exterior surface of a vehicle, having:

(c) a protective, generally light transmitting cover **34** overlying the plurality of solid-state light emitting devices **9**, the flexible substrate on which the solid-state light emitting devices are mounted and the flexible protective cover having a flexible panel that is affixed to and conforms to the exterior surface of a vehicle, even though the exterior surface is non-planar, producing light when the solid-state light emitting devices are energized by the electrical current (figures 3 and 4; column 1, lines 50-63, column 8, lines 14-63).

Parker and Goodrich do not disclose expressly a flexible light emitting panel for application to an exterior surface of a vehicle, having:

(a) a flexible substrate including a positive flexible conductive trace and a negative flexible conductive trace;

(b) a plurality of solid-state light emitting devices where an anode of each solid-state light emitting device being electrically connected to the positive flexible conductive trace and a cathode of each solid-state light emitting device being electrically connected to the negative flexible conductive trace;

Bennion discloses a flexible light emitting panel **10** having:

(a) a flexible substrate **11** including a positive flexible conductive trace and a negative flexible conductive trace **12** (column 3, lines 27-35);

(b) a plurality of solid-state light emitting devices **LED1 – LED6** (figure 7) where an anode of each solid-state light emitting device being electrically connected to the

positive flexible conductive trace and a cathode of each solid-state light emitting device being electrically connected to the negative flexible conductive trace (see figures 1 and 7);

Parker, Goodrich, and Bennion are analogous art because they are from the same field of endeavor of providing a signaling device using groups of different color LEDs in a transparent and weather resistant covering.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the flexible substrate of Bennion's disclosure having positive and negative conductive traces in the flexible vehicular light source of Parker and Goodrich.

The suggestion/motivation for doing so would have been to provide a flexible vehicular light source that is weather resistant (waterproof) and allows individual control of LEDs for signaling purposes by using a parallel circuit for each LED, or each color group of LEDs, in combination with Direct Current (DC) power supplied by an electrical system of a vehicle.

Regarding claims 14 and 15, Parker further discloses that the plurality of solid-state light emitting devices **9** are grouped in regard to a color of light emitted, the plurality of solid-state light emitting devices having a plurality of groups, each group emitting light of a different color (column 5, lines 9-23), including a first group that emit white light, a second group that emit red light, and a third group that emit amber light having a tail light assembly for a vehicle (see figures 3 and 4; column 1, lines 10-20; column 8, lines 47-63).

Regarding claim 16, Parker does not expressly disclose where the flexible panel is adapted to being mounted on a front surface of a vehicle.

It would have been obvious design choice to a person of ordinary skill in the art to mount a flexible panel used for a taillight assembly, which would emit red color light, of a vehicle and mount it to the front surface of a vehicle to function as a turn signal light that would emit yellow, or amber, colored light.

The benefit of doing so would be to use a flexible panel having the same size and shape, but using different color light emitting devices, or lens colors, to define their purpose in order to reduce manufacturing costs.

Regarding claim 17, Parker further discloses where the flexible light emitting panel, further has a plurality of lenses, each lens focusing the light emitted by a different one of the plurality of solid-state light emitting devices in a predefined direction that is generally oriented away from the flexible substrate (column 7, lines 27-35; column 8, lines 52-63).

Regarding claims 19 and 20, the flexible light emitting panel of Claim 13, Bennion further discloses

where the plurality of solid-state light emitting devices **100** are electrically coupled to each flexible conductive trace **102,103** with one of a solder and a conductive adhesive **109** (figure 10; column 12, line 35 – column 13, line 10), or

where at least one of the anode and the cathode of each of the plurality of solid-state light emitting devices is connected to a corresponding one of the positive and negative flexible conductive traces using a flexible lead **108**.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use flexible connections (i.e. flexible leads and conductive epoxy) between the traces and the solid-state light emitting devices.

The suggestion/motivation for doing so would have been to maximize the flexibility and long–term circuit integrity of the flexible light-emitting panel.

Regarding claim 22, Parker discloses where the flexible substrate is mounted within a recess formed in the exterior surface of the vehicle (column 9, lines 22-29).

Therefore, it would have been obvious to combine Bennion with Parker and Goodman to obtain the invention as specified in claims 13-17, 19, 20, and 22.

8. Claims 9, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker and Goodrich as applied to claim 1 above, and further in view of Parkyn, Jr. *et al.* (USPN 5,926,320).

Parker and Goodrich do not disclose expressly the flexible vehicular light source of claim 1, further having:

a totally internally reflective (TIR) lens that covers at least a portion of the plurality of solid-state light emitting devices, said TIR lens focusing the light emitted thereby in a desired direction.

a totally internally reflective (TIR) lens for each of the plurality of solid-state light emitting devices, said TIR lenses focusing the light emitted by the plurality of solid-state light emitting devices away from the front surface, in a desired direction.

Parkyn, Jr. discloses a Ring-Lens system (see figures 4-6; column 1, lines 53-62) for efficient beam formation having:

a totally internally reflective (TIR) lens that covers at least a portion of a solid-state light emitting device, the TIR lens focusing the light emitted thereby in a desired direction.

a totally internally reflective (TIR) lens for each of a solid-state light emitting device, the TIR lenses focusing the light emitted by the solid-state light emitting device away from the front surface, in a desired direction (column 1, lines 5-24; column 4, lines 55-61).

Parker, Goodrich, and Parkyn, Jr. are analogous art because they both disclose the use of solid-state light emitting devices used in combination with modifiers to obtain light distribution in a desired pattern, or direction.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the TIR lens of Parkyn's disclosure for each solid-state light emitting device of Parker and Goodrich's flexible vehicular light source device.

The suggestion/motivation for doing so would have been because to improve light utilization efficiency, or reduce electrical power consumption (Parkyn: column 1, lines 5-50, esp. lines 48-50).

Therefore, it would have been obvious to combine Parkyn with Parker and Goodrich to obtain the invention as specified in claims 9, 10, and 11.

9. Claims 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker, Goodrich, and Bennion as applied to claim 13 above, and further in view of Parkyn, Jr. *et al.* (USPN 5,926,320).

The flexible light emitting panel of Parker, Goodrich, and Bennion is as disclosed above.

Parker, Goodrich, and Bennion do not disclose expressly the flexible light-emitting panel of Claim 13, further having:

a plurality of totally internally reflective (TIR) lenses, each TIR lens reflecting the light emitted by a different one of the plurality of solid-state light emitting devices in a predefined direction that is generally oriented away from the flexible substrate.

a totally internally reflective (TIR) lens that covers at least a portion of the plurality of solid-state light emitting devices, the TIR lens focusing the light emitted thereby in a desired direction.

Parkyn, Jr. discloses a Ring-Lens system (see figures 4-6; column 1, lines 53-62) having:

a totally internally reflective (TIR) lens, each TIR lens reflecting the light emitted by a solid-state light emitting device in a predefined direction that is generally oriented away from the flexible substrate.

a totally internally reflective (TIR) lens that covers at least a portion of a solid-state light emitting device, the TIR lens focusing the light emitted thereby in a desired direction (column 1, lines 5-24; column 4, lines 55-61) (column 1, lines 5-24; column 4, lines 55-61).

Parker, Goodman, and Parkyn, Jr. are analogous art because they all disclose the use of solid-state light emitting devices in combination with modifiers to distribute light energy in desired patterns, or directions.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the TIR lens of Parkyn's disclosure for each solid-state light emitting device of Parker and Goodman's flexible vehicular light source.

The advantage of doing so would have been to provide increased light utilization efficiency, or reduced electrical power consumption (Parkyn: figures 5 and 6; column 1, lines 5-50, esp. lines 48-50).

Therefore, it would have been obvious to combine Parkyn with Parker, Goodrich, and Bennion to obtain the invention as specified in claims 18 and 21.

Response to Arguments

10. The Applicant's Response filed on 14 May 2002 has been considered by the examiner, and has resulted in a new rejection based on the merits of the case as is shown above.

The Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David V. Hobden whose telephone number is 703-305-4469. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L O'Shea can be reached on 703-305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0956.

dvh
June 13, 2002

Sandra O'Shea
Supervisory Patent Examiner
Technology Center 2800